



Z H O N E™

# **SNE2040G-P and SNE2040G-S**

## **4-Port Network Extenders**

### **Installation Instructions**

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## **Product Documentation Online**

This document describes units manufactured after July 2004. See the prior version of this document for information about units manufactured earlier.

Complete documentation for Zhone network extenders and related products is available at [www.zhone.com](http://www.zhone.com).

## **Package Contents**

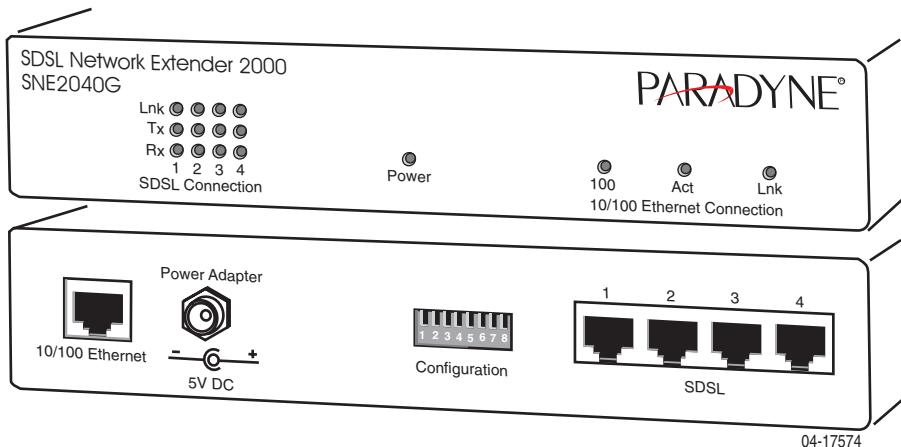
Unpack and Inspect the Equipment. The following components should be included:

- 1 SNE2040G
- 1 Power supply

If there is any visible damage, do not attempt to connect the device. Contact your sales or service provider.

# Connecting to Power

Plug the power supply into the Power Adapter port on the back of the SNE2040G and connect it to your power source. Verify that the Power LED on the front of the SNE2040G is illuminated.



Upon start up, the Ethernet link will remain disabled (as indicated by no illumination of the Ethernet Rx, Tx, and Lnk LEDs) until at least one of the SHDSL connections has been established.

# Switchpack Configuration (SNE2040G-P)

Configuration switches for the G.SHDSL ports are on the back of the SNE2040G, numbered from left to right, 1–8. Switches 1–3 on the SNE2040G-P together provide eight bandwidth options for the four G.SHDSL ports as a group. Bandwidth cannot be configured individually for the G.SHDSL ports.

NOTE: Configuration switches 1–3 are used for G.SHDSL bandwidth configuration on the SNE2040G-P ONLY. The SNE2040G-S determines bandwidth via communication with its partner G.SHDSL provider equipment. Switches 4–8 are not currently used on the SNE2040G provider or subscriber models.

Position switches 1–3 on the SNE2040G-P according to the cable distance for your connection and your desired G.SHDSL bandwidth. Distance capabilities listed in the following table assume the use of 26 American Wire Gauge (AWG) cable. Connections made with cable of a heavier gauge will link up at greater distances. Your SNE2040 may not link up if the cable is in poor condition or if the cable distance is greater than a particular bandwidth will support. If a link is achieved under such conditions, traffic quality may be affected.

**Table 1: Bandwidth Configuration**

Switch Position			Bandwidth (kbps)		Distance	
1	2	3	Single Line Connection	Double Line Bonded Connection	Feet	Meters
down	down	down	2,320	4,640	11,300	3,444
down	down	up	2,064	4,128	12,200	3,719
down	up	down	1,552	3,104	12,800	3,901
down	up	up	1,040	2,080	16,000	4,877
up	down	down	784	1,568	16,800	5,121
up	down	up	528	1,056	18,400	5,608
up	up	down	400	800	19,400	5,913
up	up	up	Adaptive*	Adaptive*	Varies	Varies

\* The SNE2040G-P will run in Adaptive mode when switches 1–3 are in the Up position: the four ports will train up to the best possible speed supported by the SNE2040G-P, the remote G.SHDSL equipment, and the copper cable pair connecting the two.

# Connecting the SHDSL Lines

The primary feature of the SNE2040 is loop bonding capability among all four ports. However, both the provider and subscriber units can function with a single G.SHDSL connection.

Link up time between local and remote SHDSL network extenders can vary from one to five minutes depending on the quality, gauge and distance of the copper cables. If cable distance is greater than a particular bandwidth will support, the units may not link up or, if they do achieve link, traffic quality may be affected.

## Loop Bonded Connection

Using two, three or four G.SHDSL lines for one network connection (loop bonding) will net two, three or four times the speed and data passing capability as a single G.SHDSL connection.

Multiple G.SHDSL lines used for one connection provide backup for each other should one or more of the lines become disabled.

NOTE: An SNE2040G must be connected with equipment that is also loop bonding capable in order to utilize the loop bonding feature; see the document *Product to Product SDSL Loop Bonding Capability*.

### ► Procedure

To establish a loop bonding connection:

- 1 Plug your G.SHDSL cables into the G.SHDSL RJ45 ports (any combination of G.SHDSL 1, 2, 3 and 4) on the rear of the SNE2040G. The order of connection is not important.
- 2 Verify all connections: the G.SHDSL Link (Lnk) LED for each connected port will pulse green to indicate the connection is established and operational.

## Single Line Connection

A single line connection can be established between an SNE2040G-S and any of Zhone's G.SHDSL provider network extenders. Likewise, a single line connection can also be established between an SNE2040G-P and any of Zhone's G.SHDSL subscriber network extenders.

### ► Procedure

To establish a single line connection:

- 1 Plug your G.SHDSL cable into one of the four G.SHDSL RJ45 ports on the back of the SNE2040G. Any of the four ports may be used.
- 2 Verify your connection: the G.SHDSL LED corresponding to the connected port (G.SHDSL 1–4) will flash green to indicate the connection is established and operational.

# SHDSL RJ45 Connector Pinouts

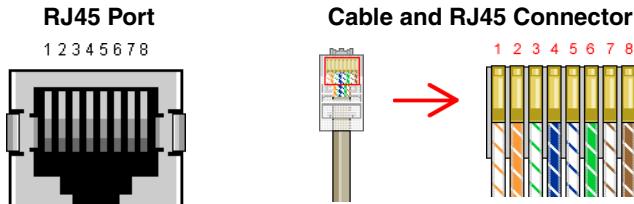


Table 2: SHDSL RJ45 Port

Pin	Connection
1	not used
2	not used
3	not used
4	Ring
5	Tip
6	not used
7	not used
8	not used

# Connecting the Ethernet Line

If a G.SHDSL connection has not yet been made, the Ethernet link will remain disabled (as indicated by no illumination of the Ethernet 100, Act and Lnk LEDs) until at least one of the four G.SHDSL links has been established.

## Duplex Mode

The 10/100 Ethernet port auto-negotiates speed and duplex mode in accordance with the remote equipment to which it is connected; Ethernet speed and duplex mode configurations cannot be hard set on the SNE2040G. For the best connection results, the remote device (PC, hub, or switch) should be set to auto-negotiate speed and duplex mode as well. If the remote device cannot be configured to auto-negotiate, speed may be hard set at either 10 Mbps or 100 Mbps but duplex mode must be hard set to Half Duplex; a 10/100 Ethernet connection will not operate properly if the remote device is hard set to Full Duplex.

- Half Duplex – Receive and transmit functions are mutually exclusive; data transmission occurs in only one direction at a time. Packet collisions are not unusual.
- Full Duplex – Receive and transmit functions occur simultaneously, effectively doubling aggregate bandwidth and preventing packet collisions.

## 10/100 Ethernet RJ45 Pinouts

**Table 3: Ethernet RJ45 Connection**

Pin	Connection
1	Rx+
2	Rx-
3	Tx+
4	not used
5	not used
6	Tx-
7	not used
8	not used

# LED Indicators

This document describes units manufactured after July 2004. See the prior version of this document for information about units manufactured earlier.

Upon start up, the Ethernet link is disabled (as indicated by no illumination of the Ethernet 100, Act, and Lnk LEDs) until at least one of the four G.SHDSL connections has been established. Likewise, if established G.SHDSL connections are lost, the Ethernet link is automatically disabled (as indicated by no illumination of the Ethernet 100, Act and Lnk LEDs) until at least one of the connections has been reestablished.

**Table 4: SNE2040G LEDs (Sheet 1 of 2)**

LED	STATE	INDICATION	ADDITIONAL INFORMATION
Power	Solid Green	Unit is operational	If the Power LED is not illuminated, it is unlikely that the SNE2040 is receiving power and therefore none of the LEDs will be illuminated.
SDSL Link (Lnk) Ports 1–4	Pulsing Green*	G.SHDSL connection is established and active	Traffic is flowing.
	Solid Green	problematic G.SHDSL connection	A connection exists but there is indication of a problem with the G.SHDSL line.
	No Illumination	no G.SHDSL connection	See note below.
SDSL Data Reception (Rx) Ports 1–4	Flashing Amber*	G.SHDSL activity	The SNE2040G is receiving data.
	Solid Amber	heavy Rx traffic	The SNE2040G is receiving large amounts of data.
	No Illumination	no activity	A G.SHDSL link may exist but the SNE2040 is not receiving any data.
SDSL Data Transmission (Tx) Ports 1–4	Flashing Amber*	G.SHDSL activity	The SNE2040G is transmitting data.
	Solid Amber	heavy Tx traffic	The SNE2040G is transmitting large amounts of data.
	No Illumination	no activity	A G.SHDSL link may exist but the SNE2040 is not transmitting any data.

**Table 4: SNE2040G LEDs (Sheet 2 of 2)**

LED	STATE	INDICATION	ADDITIONAL INFORMATION
100 Mbps Ethernet Link (100)	Solid Green	100 Mbps Ethernet connection is established	If the Ethernet 100 LED is illuminated, the Ethernet Lnk LED will also be illuminated.
	No Illumination	No 100 Mbps Ethernet connection	If the Ethernet 100 LED remains unlit but the Ethernet Lnk LED is illuminated then a connection has been established at 10 Mbps rather than 100 Mbps.
10/100 Ethernet Activity (Act)	Pulsing Amber*	Standard operation	Traffic is flowing without any problems
	Solid Amber	Heavy traffic	
	No Illumination	No activity	Either there is no Ethernet link or a link exists but there is no activity.
10/100 Ethernet Link (Lnk)	Solid Green	Ethernet connection is established	If the Ethernet Lnk LED is illuminated but not the Ethernet 100 LED then a 10 Mbps connection has been established. If the Ethernet 100 and Lnk LEDs are BOTH illuminated then a 100 Mbps connection has been established.
	No Illumination	No Ethernet connection	The Ethernet 100 and Act LEDs will remain unlit by default.

\* A pulsing LED blinks steadily at a rate of once per second. A flashing LED blinks at a more rapid, less constant rate.

# EMI Notices

## United States – EMI Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

The authority to operate this equipment is conditioned by the requirements that no modifications will be made to the equipment unless the changes or modifications are expressly approved by Zhone Technologies, Inc.

If the equipment includes a ferrite choke or chokes, they must be installed as described in the installation instructions.

## Canada – EMI Notice

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

## ACTA Customer Information

This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On the bottom of the network extender is a label that contains, among other information, a product identifier in the format US:AAAEQ##TXXXX. If requested, this number must be provided to the telephone company.

A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. See installation instructions for details.

If the network extender causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

If trouble is experienced with this equipment, please contact your local sales representative, service representative, or distributor directly for any help needed. For additional information concerning warranty, sales, service, repair, installation, documentation, training, distributor locations, or Zhone Technologies worldwide office locations, contact Global Service and Support. See *Technical Support* on page 15.

If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

The customer may make no repairs to the equipment.

Connection to party line service is subject to state tariffs. Contact the state public utility commission, public service commission or corporation commission for information.

## Supplier's Declaration of Conformity

Place of Issue: Paradyne Corporation (now Zhone Technologies, Inc.)  
8545 126th Avenue North  
Largo, FL 33773-1502  
USA

Date of Issue: 4/18/2005

Paradyne Corporation, located at the above address, hereby certifies that the Model SNE2040G-P and Model SNE2040G-S bearing labeling identification number US:AW2DLNANSNE2040 complies with: the Federal Communications Commission's ("FCC") Rules and Regulations 47 CFR Part 68, and the Administrative Council on Terminal Attachments ("ACTA")-adopted technical criteria TIA-968-A, "Telecommunications - Telephone Terminal Equipment -Technical Requirements for Connection of Terminal Equipment To the Telephone Network, October 2002," as amended by ANSI/TIA-968-A-3 2004, "Telecommunications - Telephone Terminal Equipment -Technical Requirements for Connection of Terminal Equipment to the Telephone Network - Addendum 3."



Patrick Murphy  
Senior Vice President, Chief Financial Officer, Paradyne Corporation

## Notice to Users of the Canadian Telephone Network

NOTICE: This equipment meets the applicable Industry Canada Terminal Equipment Technical Specifications. This is confirmed by the registration number. The abbreviation IC before the registration number signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment.

NOTICE: The Ringer Equivalence Number (REN) for this terminal equipment is labeled on the equipment. The REN assigned to each terminal equipment provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed five.

If your equipment is in need of repair, contact your local sales representative, service representative, or distributor directly.

## CE Marking

When the product is marked with the CE mark on the equipment label, a supporting Declaration of Conformity may be downloaded from the Zhone World Wide Web site at [www.zhone.com](http://www.zhone.com).

## Japan Notice

### Class A ITE

この装置は、情報処理装置等電波障害自主規制協議会（V C C I）の基準に基づくクラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

This is a Class A product based on the standard of the Voluntary Control Council for interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

# ⚠ Important Safety Instructions

- 1** Read and follow all warning notices and instructions marked on the product or included in the manual.
- 2** Slots and openings in the cabinet are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, these slots and openings must not be blocked or covered.
- 3** Do not allow anything to rest on the power cord and do not locate the product where persons will walk on the power cord.
- 4** Do not attempt to service this product yourself, as opening or removing covers may expose you to hazardous voltage or to other risks. Refer all servicing to qualified service personnel.
- 5** General purpose cables are used with this product for connection to the network. Special cables, which may be required by the regulatory inspection authority for the installation site, are the responsibility of the customer. Use a UL Listed, CSA certified, minimum No. 26 AWG line cord for connection to the Digital Subscriber Line (DSL) network.
- 6** When installed, the product must comply with the applicable Safety Standards and regulatory requirements of the country in which it is installed. If necessary, consult with the appropriate regulatory agencies and inspection authorities to ensure compliance.
- 7** A rare phenomenon can create a voltage potential between the earth grounds of two or more buildings. If products installed in separate buildings are interconnected, the voltage potential may cause a hazardous condition. Consult a qualified electrical consultant to determine whether or not this phenomenon exists and, if necessary, implement corrective action prior to interconnecting the products.
- 8** Input power to this product must be provided by one of the following: (1) a UL Listed/CSA certified power source with a Class 2 or Limited Power Source (LPS) output for use in North America, or (2) a certified power source, with a Safety Extra Low Voltage (SELV) output having a maximum of 240 VA available, for use in the country of installation.
- 9** In addition, since the equipment is to be used with telecommunications circuits, take the following precautions:
  - Never install telephone wiring during a lightning storm.
  - Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
  - Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
  - Use caution when installing or modifying telephone lines.
  - Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
  - Do not use the telephone to report a gas leak in the vicinity of the leak.

# Contacting Global Service and Support

Contact Global Service and Support (GSS) if you have any questions about this or other Zhone products. Before contacting GSS, make sure you have the following information:

- Zhone product you are using
- System configuration
- Software version running on the system
- Description of the issue

## Technical Support

If you require assistance with the installation or operation of your product, or if you want to return a product for repair under warranty, contact GSS. The contact information is as follows:

E-mail	<a href="mailto:support@zhone.com">support@zhone.com</a>
Telephone (North America)	877-ZHONE20
Telephone (International)	510-777-7133
Internet	<a href="http://www.zhone.com/support">www.zhone.com/support</a>

If you purchased the product from an authorized dealer, distributor, Value Added Reseller (VAR), or third party, contact that supplier for technical assistance and warranty support.

## Service Requirements

If the product malfunctions, all repairs must be performed by the manufacturer or a Zhone-authorized agent. It is the responsibility of users requiring service to report the need for service to GSS.



\*SNE2-A2-ZN12-30\*